

**COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF INDUSTRIAL ACCIDENTS**

**TREATMENT GUIDELINES  
REVISED EFFECTIVE MARCH 13, 2004**

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**GUIDELINE NUMBER 1 - CARPAL TUNNEL SYNDROME (CTS)**

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**I. Introduction:**

The attached clinical guideline has been created to consistently improve health care services provided to injured workers by outlining the appropriate information gathering and decision making processes involved in the management of CTS in adults, **that is determined to be work related**. The guideline is a consensus document, and should be used as a tool to guide various multi-disciplinary health care practitioners to provide quality care to injured workers. The guideline is not intended to substitute for appropriate medical judgement, and is therefore written to be broad enough to allow for a wide range of diagnostic and treatment modalities and to purposely allow for philosophical and practice differences between various licensed, multi-disciplinary health care practitioners that provide care to injured workers with CTS. In order to address the varying clinical differences that may arise in the treatment of CTS within this guideline, the following statement is included: *It is expected that approximately ten percent (10%) of cases may fall outside of this guideline and may be reviewed and outcomes determined on a case by case basis. If objective clinical improvement is delayed or slower than expected, the treating provider must justify the necessity of continued care with a valid clinical rationale, with supporting, objective clinical findings.*

**II. Background:**

Carpal Tunnel Syndrome (CTS) is a common disorder with symptoms involving the median nerve. The median nerve is vulnerable to compression and injury in the palm and at the wrist, where it is bounded by the wrist (carpal) bones and the transverse carpal ligament. CTS is believed to be caused by local impairment of the median nerve at the carpal canal in the wrist secondary to narrowing or crowding of the nerve in the carpal tunnel. The median nerve is extremely vulnerable to compression and injury in the region of the wrist and palm. *The condition may have multiple, both work and non-work related, etiologies including, but not limited to:* 1) space-occupying lesions such as the residual of a wrist fracture, infections, local edema, tumors, flexor tenosynovitis (non-specific as well as that associated with rheumatoid arthritis), foreign bodies, or aberrant muscles; 2) systemic conditions such as pregnancy, obesity, diabetes mellitus, thyroid dysfunction, arthritis, or amyloidosis; 3) overuse of hand and wrist, trauma and repetitive movements, constricting bandages around wrist, or improper postural habits regarding the wrist joint; or 4) it may have a spontaneous or idiopathic onset. The condition can occur at any age, but occurs three to five times more frequently in women than men.

**III. History:**

- A. A detailed history considering work and non-work activities is essential and should include documentation of duration, evolution, precise anatomic location and intensity of all symptoms.
- B. Occupational Relationship: activities requiring continual use of the hands or repetitive motions using force may result in an occupation carpal tunnel syndrome. Prolonged flexion or extension, gripping, pressure over the palm, unusual hand postures (prolonged flexion), trauma and fractures of the wrist and hand are associated with the syndrome, vibration may also contribute.

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**C.** A history of CTS may elicit *any or all of the following*:

1. Character of symptoms: tingling, numbness, pain along the sensory distribution of the median nerve (dull, aching discomfort), hand weakness.
2. Frequency: episodic or constant.
3. Duration: days, weeks, or years.
4. Location: anatomic involvement, unilateral or bilateral.
5. Association with hand position or activity: repetitive, sustained or forceful wrist/finger motions; vibrating/oscillating tools.
6. Onset: relation to specific work or non-work activities, association with other medical conditions (see review of symptoms).
7. Relief: shaking the hand, vacation (time away from work and/or aggravating non-work activities).
8. Thenar atrophy may progress to marked muscle wasting with corresponding functional impairment. Vasomotor and skin trophic changes may include dryness, coldness, discoloration, and even ulceration within the median nerve distribution.
9. Similar symptoms may be seen in conditions such as more proximal syndrome should be ruled out.

**IV. Physical Examination:**

**A.** Both upper extremities must be evaluated. Any objective findings should correlate with the patient's history and symptoms. At least one of the following is required:

1. Absence of proximal syndrome (e.g. no nerve injury above the wrist).
2. Sensory loss or hyperesthesia to pinprick and light touch in the distal median nerve distribution.
3. Phalen's sign: maximum flexion of wrist to produce paresthesia in median nerve distribution, within 30 seconds, with elbow not greater than 90 degrees of flexion.
4. Tinel's sign: gentle tapping at the volar wrist crease (midline) to produce paresthesia in the median nerve distribution.
5. Inspection and palpation: atrophy of the thenar muscles.
6. Weakness or loss of active thumb opposition.

**V. Diagnostic Testing Procedures:**

**A.** Laboratory Testing: must correlate with history and physical examination findings. **Not allowed** if signs and symptoms are indicative of disease other than carpal tunnel or related systemic disease.

**B.** Plain X-rays indicated when history of direct injury or other abnormal process of the wrist and hand is documented. **Up to 4 views are allowed.**

**C.** Electrodiagnostic testing, including electromyography (EMG) and nerve conduction studies (NCS) is **Allowed** if clinically indicated.

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**VI. Treatment and Therapeutic Procedures:**

**A. Outpatient-Non-Operative- Up to 8 Weeks:**

1. The following office visits are **Allowable** in the initial 8 weeks of treatment:
  - a. Physician up to four (4) visits
  - b. Physical Therapy up to eight (8) visits
  - c. Occupational Therapy up to eight (8) visits
  - d. Chiropractic up to eight (8) visits
2. Immobilization with Splinting: should be done in the neutral position.
3. Patient education: the following shall be discussed with the patient at the initial physician visit and repeated thereafter as necessary:
  - a. Key points about signs and symptoms of CTS and postural body mechanic changes and behavior modification.
  - b. Causes of CTS and how to avoid them.
  - c. Instruction and demonstration in the purpose and correct use of treatment modalities and medications.
  - d. How medications work and their potential adverse effects.
4. Modalities: including cold, phonophoresis, iontophoresis is allowed if part of an overall treatment plan (**Not Allowed if sole method of treatment**).
5. Ergonomic assessment may be helpful if done by a qualified individual.
6. Medication: Non-steroidal, Anti-Inflammatory Drugs (NSAID) are probably the most useful medications in acute upper extremity pain. In mild cases, they may be the only drugs required for analgesia. **Analgesics (acetaminophen and acetylsalicylic acid):** are the common choices for non-narcotic analgesia. **Steroid Injections:** are allowed (*not to exceed* 3 injections in 16 weeks).
7. For cases that fail to show clinical improvement or deteriorate with treatment follow-up may be covered by Guideline Number 2-Carpal Tunnel Release.

**B. Acupuncture:**

Acupuncture is an accepted and widely used procedure for the relief of pain and inflammation and there is prolific scientific evidence to support its use. While the exact mode is only partially understood, Western medicine studies suggest acupuncture stimulates the nervous system at the level of the brain, promotes deep relaxation and affect the release of neurotransmitters. Acupuncture is commonly used as an alternative or in addition to traditional Western pharmaceuticals. While it is commonly used when pain medication is reduced or not tolerated, it may be used as an adjunct to physical rehabilitation and/or surgical intervention to hasten the return of functional activity.

**a. Requirements**

1. Acupuncture may be authorized when it is ordered by a licensed MD, or DC.
2. Acupuncture must be performed by an acupuncturist licensed by the Mass. Board of Registration.
3. Time to produce effect: six (6) visits in first eight (8) weeks.
4. After six (6) visits the ordering physician may approve additional visits if functional clinical progress is documented. Maximum visits are not to exceed 16 visits in 16 weeks.

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**C. Outpatient-Non-Operative Treatment With Improvement: Weeks 9-16:**

**1. The following office visits are Allowed:**

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|--------------------------------|---|
| <b>a. Physician</b>            | -up to four (4) additional visits                                 |
| <b>b. Physical Therapy</b>     | -up to eight (8) additional visits                                |
| <b>c. Occupational Therapy</b> | -up to eight (8) additional visits                                |
| <b>d. Chiropractic</b>         | -up to eight (8) additional visits                                |
| <b>e. Acupuncture</b>          | *-up to ten (10) additional visits (with physician re-evaluation) |

**VII. Special Considerations:**

**A.** For patients treated by more than one discipline (e.g. physical therapy, allopathic medicine, and chiropractic) similar services shall not be duplicated.

**B.** The following treatments are **Not Allowed** when CTS is the only diagnosis:

1. Ultrasound
2. Electrical nerve (TENS) or muscle stimulators
3. Paraffin baths
4. Whirlpool baths
5. Fluid-therapy

**VIII. Return to Work Expectations:**

**A.** Ergonomic assessment may be indicated if done by a qualified individual.

**B.** Patient education: the following shall be discussed with the patient at the initial physician visit and repeated thereafter as necessary:

1. Key points about signs and symptoms of CTS and postural body mechanic changes and behavior modification.
2. Causes of CTS and how to avoid them.
3. Instruction and demonstration in the purpose and correct use of treatment modalities and medications.
4. How medications work and their potential adverse effects.

**Sources:** Colorado, Department of Labor and Employment  
California, Industrial Medical Council  
National Guideline Clearinghouse  
American Academy of Orthopedics  
Maine Workers Compensation Board  
State of Washington, Department of Labor and Industries  
Massachusetts's Health Care Services Board